Development and Monitoring an integrated system of separate biowaste stream at 38 Municipalities

Find your new “Coffee” bin at your neighborhood!
The mission of FoDSA CM is

- integrated treatment of Municipal solid waste, aiming to reach the targets that have been set by the European and National Laws.
- protection of the environment and the public health.
- Provide an advisory role to it’s members
GR Biowaste Policy
Separate collection streams
Sorted and recycled at source
Construction of composting or anaerobic digestion facilities.

Municipalities
31.12.2022
Separate Collection at source of Municipal biowaste

Mass catering establishments
Separate Collection at source, regardless of their capacity

Large Producers
Separate collection at source:
- Food Processing units
- Food markets (>5,000 sq.m.)
- Hotels (>100 beds)
Composition solid waste analysis

- Biowaste: 44.3%
- Paper and cupboard: 22.2%
- Plastics: 13.9%
- Metals: 3.9%
- Glass: 4.3%
- Recyclable non unrecoverable: 11.4%

National Waste Management Plan 2020-2030

- 20 01 08 biodegradable kitchen and canteen waste
- 20 02 01 biodegradable waste
- 20 03 02 waste from markets
Funding of Municipal Biowaste Equipment to 38 Municipalities

Single beneficiary of sorting at source bio-waste equipment and tools
Funded by Operational Programme of the Region of Central Macedonia 2014-2020

**FODSA CM**

- Equipment Provision
- Technical Support of Municipalities and provision of an awareness campaign package
- Biowaste monitoring and treatment

**Municipalities**

- Develop and monitoring of the brown bin network
- Separate collection and transport to a composting unit
- Fuel, collection staff, etc
- information and awareness campaign
<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Programmatic Contracts between FoDSA and Municipalities</td>
</tr>
<tr>
<td>2.</td>
<td>Consent of assignment</td>
</tr>
<tr>
<td>3.</td>
<td>Technical and economical offers</td>
</tr>
<tr>
<td>4.</td>
<td>Draft Tender Documents</td>
</tr>
<tr>
<td>5.</td>
<td>Judgment Act Integration</td>
</tr>
<tr>
<td>6.</td>
<td>Public Consultation</td>
</tr>
<tr>
<td>7.</td>
<td>general final design</td>
</tr>
<tr>
<td>8.</td>
<td>Tender approval</td>
</tr>
<tr>
<td>9.</td>
<td>Public Tendering Procedure</td>
</tr>
<tr>
<td>10.</td>
<td>Selection of tender contractors</td>
</tr>
<tr>
<td>11.</td>
<td>Pre-approval of contracts</td>
</tr>
<tr>
<td>12.</td>
<td>Implementation Contracts</td>
</tr>
</tbody>
</table>
- 37 Shredders
- 37 Road Maps for developing separate bio-waste collection networks at Municipal level
- Monitoring programme
- Technical support Municipal separate bio-waste collection system
- Public awareness material

**Municipalities**
- 37

**Collection Vehicles**
- 48
- 37 (5m³) – 11 (14 m³)

**Brown Bins**
- 35.940
- 34.937 (240L) – 1.003 (660L)
• Frequency: 7 days/week
• Transport: 20 min to the collection area, 90 min to the composting unit
• Emptying time 120sec.
• Maximum collection routes per day: ≤3
• Total route time ≤7h
• Net route time 6.2h
• Capacities: 5m³ and 14m³
• Each municipality will receive a small for flexible

• One (1) 240 L bin per 50 residents
• At Municipalities over 63,000 inh., 5% of 240L bins are replaced by a corresponding number of 660L bins (collection needs of large biowaste producers and/or areas of high population density)
Road Map for the development of the biowaste collection network at Municipal Level

Phase A. Large producers Network
A1. Large Producers (*Food Markets, Hotels, food processing facilities, Fruit Shops*)
A2. Mass catering establishments, nurseries, kindergartens, hospitals, camps
A.3 Restaurants, bakeries, groceries

Phase B. Household Network
B1. Pilot action to households (around 5,000 residents)
B2. Municipal level
Information and Public Awareness Material
Monitoring and tracing biowaste flows at Municipal Level

Biowaste quantities
- per management facility
- per month of production
- per year
- per producer (municipality, food market, hotel etc.)
### Pricing Policy

#### Treatment cost per tone

<table>
<thead>
<tr>
<th></th>
<th>Biowaste Treatment fee</th>
<th>Disposal Gate fee residues</th>
<th>Landfill tax (residues)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biowaste</strong></td>
<td>18€</td>
<td>5.4€</td>
<td>3.75€</td>
<td>27.15€</td>
</tr>
<tr>
<td></td>
<td><em>(15% residues x disposal gate fee)</em></td>
<td><em>(15% x Landfill tax)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Disposal Gate fee</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Landfill tax</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mix waste</strong></td>
<td>36€</td>
<td></td>
<td>25€</td>
<td>61€</td>
</tr>
</tbody>
</table>

- permitted threshold of mix waste 15%
- additional discount in the total waste management costs, depending on the amount of separately collected bio-waste in relation to the total amount of solid waste generated by the Municipalities
Results (1/2)

- Formation of a **working group** with representatives from all departments involved in all stages of the process, as it includes several deadlines, stages and procedures.

- The **single funding** proposal ensured the fulfilment of the institutional obligation of the local authorities for the **simultaneous beginning** of the separate biowaste collection (01/01/2023) in the entire Central Macedonia Region regardless of the size, staffing and operational readiness of the local authorities.

- The creation of a **common Awareness Campaign** material for almost 2,000,000 million inhabitants created a **single identity** that works cumulatively with multiplying benefits.

- The single funding procedure **saved working hours** and procedures as the whole process was implemented by one beneficiary and not separately for each Local Authority.
Results (2/2)

• This added value process has formed a tool that could be adapted for respective funding procedures of the Municipalities.

• Contributes to the implementation of the new institutional framework which foresees that the financing of Local Authorities’ actions could be delivered through Waste Management Authorities with programmatic contracts.

• Additional personnel for more efficient collection and monitoring will be necessary. A regular exchange of information among waste management departments in each Region or on a national level, is necessary within the same type of settlement structure, along with the set-up of a bench-marking process concerning the improvement of the collection’s efficiency.

• The total return on investing in sorting bio-waste at source decreases around 55.5% the pricing policy and also an extra discount is being provided depending on the performance of each Municipality in bio-waste recovery.
Development and Monitoring an integrated system of separate biowaste stream at 38 Municipalities

Find your new “Coffee” bin at your neighborhood!

Presenting Author
Theodora Paschali
Email: th.paschali@fodsakm.gr

Regional Association of Solid Waste Management Agencies of Central Macedonia